

What is claimed is:

1. A write once disc that is a single record layer disc in which a lead-in area, a data area, and a lead-out area are sequentially disposed, the disc comprising a defect management area (DMA) that is present at least once in the lead-in area and the lead-out area,
wherein defect information and defect management information are repeatedly recorded in the DMA according to a recording operation.
2. The disc of claim 1, wherein a plurality of the DMAs are formed in an area.
3. The disc of claim 1, wherein the defect information and the defect management information are continuously updated and recorded until the DMA has no room for recording.
4. The disc of claim 1, wherein the address of data that is most recently recorded in a user area of a record layer and the address of replacement that is most recently recorded in a spare area of the record layer are recorded in the DMA.
5. The disc of claim 1, wherein a pointer pointing out the position of the defect information is recorded in the DMA.
6. The disc of claim 1, wherein the defect management information corresponding to the defect information, which is recorded per recording operation, is recorded in the DMA.
7. The disc of claim 1, wherein the defect information contains state information specifying the state of a defect, a pointer pointing out the position of the defect, and a pointer pointing out the position of

replacement for the defect.

8. The disc of claim 7, wherein the state information indicates whether the defect is a continuous defect block or a single defect block.

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9. The disc of claim 7, wherein the state information indicates that the defect is a continuous defect block, and corresponding pointers for the defect and the replacement point out the starts of the defect and the replacement, respectively.

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10. The disc of claim 7, wherein the state information indicates that the defect is a continuous defect block, and corresponding pointers for the defect and the replacement point out the ends of the defect and the replacement, respectively.

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11. A write once disc that is a double record layer disc having a first record layer in which a lead-in area, a data area, and an outer area are sequentially located and a second record layer in which an outer area, a data area, and a lead-out area are sequentially located, the disc comprising a DMA that is present at least once of the lead-in area, the lead-out area, and the outer area,

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wherein defect information and defect management information are repeatedly recorded in the DMA according to a recording operation.

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12. The disc of claim 11, wherein a plurality of the DMAs are present in n area.

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13. The disc of claim 11, wherein the defect information and the defect management information are continuously updated and recorded until the DMA has no room for recording.

14. The disc of claim 11, wherein the addresses of data and replacement, which are most recently recorded in user areas and spare areas of the record layers, respectively, are recorded in the DMA.

5 15. The disc of claim 11, wherein a pointer pointing out the position of the defect information is recorded in the DMA.

16. The disc of claim 11, wherein the defect management information corresponding to the defect information, which is recorded
10 per recording operation, is recorded in the DMA.

17. The disc of claim 11, wherein the defect information includes state information regarding a defect, a pointer pointing out the position of the defect, and a pointer pointing out the position of
15 replacement for the defect.

18. The disc of claim 17, wherein the state information indicates whether the defect is a continuous defect block or a single defect block.

20 19. The disc of claim 17, wherein the state information specifies that the defect is a continuous defect block, and corresponding pointers for the defect and the replacement point out the starts of the defect and the replacement, respectively.

25 20. The disc of claim 17, wherein the state information specifies that the defect is a continuous defect block, and corresponding pointers for the defect and the replacement point out the ends of the defect and the replacement, respectively.

30 21. A method of managing disc defects in a disc, comprising:

recording defect information regarding data, which is recorded in a data area of the disc according to a first recording operation, as a plurality of first defect information in a DMA that is present at least once in a lead-in area and a lead-out area of the disc;

- 5 recording management information for managing the first defect information as first defect management information in the DMA; and
- repeating recording of the first defect information and recording of the first defect management information at least once while increasing indexes given to the recording operation, defect information, and defect
- 10 management information by 1.

22. The method of claim 21, wherein repeating recording of the first defect information and recording of the first defect management information is performed until the DMA has no room for recording.

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23. The method of claim 21, wherein during the recording of the first defect information, the defect information is sequentially recorded in a defect information area included in the DMA, starting from the start of the defect information area toward its end.

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24. The method of claim 21, wherein during the recording of the first defect management information, the defect management information is sequentially recorded in a defect information management area included in the DMA, starting from the start of the defect information

25 management area toward its end.

25. The method of claim 21, wherein during the recording of the first defect information, the defect information is sequentially recorded in the defect information area included in the DMA, starting

30 from the end of the defect information area toward its start.

26. The method of claim 21, wherein during the recording of the first defect management information, the defect management information is sequentially recorded in the defect information management area included in the DMA, starting from the end of the defect information management area toward its start.

27. The method of claim 21, wherein during the recording of the first defect information and the recording of the first defect management information, the corresponding defect information and defect management information are sequentially recorded to form a pair in the defect management area, starting from the start of the defect management area.

28. The method of claim 21, wherein during the recording of the first defect information and the recording of the first defect management information, the corresponding defect information and defect management information are sequentially recorded to form a pair in the defect management area, starting from the end of the defect management area.

29. The method of claim 21, wherein during the recording of the first defect information comprises:

- recording data in predetermined units;
- verifying the recorded data to detect an area of the disc with a defect;
- storing information, which designates the area with the defect as a defective area, and information, which designates a replacement area that is replacement for the defective area, as the first defect information in memory;
- repeating recording of data, verifying the recorded data, and storing of the first defect information at least once; and

reading the first defect information from the memory and recording the read information as the first defect information in the DMA.

30. A recording apparatus comprising:

5 a recording/reading unit that records data on or reads data from a disc; and

a controller that controls the recording/reading unit to repeatedly record defect information regarding data, which is recorded in a data area of the disc per recording operation, as defect information in a DMA that is present at least once in a lead-in area and a lead-out area of the disc, and record management information for managing the defect information as defect management information in the DMA.

31. The recording apparatus of claim 30, wherein the controller controls the recording/reading unit to record the defect information and defect management information per recording operation in the DMA until the DMA has no room for recording, and informs a user that disc defect management cannot be further performed when the DMA has no room for recording.

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32. A recording apparatus comprising:

a recording/reading unit that records data on or reads data from a disc; and

a controller that controls the recording/reading unit to record defect information regarding data, which is recorded in a data area of the disc according to a first recording operation, as a plurality of first defect information in a DMA that is present at least once in a lead-in area and a lead-out area of the disc, record management information for managing the first defect information as first defect management information in the DMA, record defect information regarding data, which is recorded in the data area according to a second recording operation, as a plurality of

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second defect information in the DMA, and record management information for managing the second defect information as second defect management information in the DMA.

- 5 33. The recording apparatus of claim 32, wherein the controller controls the recording/reading unit to record data in the data area while increasing indexes given to the recording operation, defect information, and defect management information by 1, until the DMA has no room for recording, and informs a user that disc defect management cannot be
10 further performed when the DMA has no room for recording.